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EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS
ON THE TIAK DIVISION OF THE
OUACHITA NATIONAL FOREST, OKLAHOMA

by

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INTRODUCTION

During August 1977, the Forest Insect and Disease Management Group conducted a biological evaluation on the Tiak Division of the Ouachita National Forest, Oklahoma, to evaluate the current status of the southern pine beetle. The southern pine beetle was first observed in Oklahoma in September 1975 (Drake and Churchill, 1975). In July 1976, the number of southern pine beetle spots increased from 193, averaging 2.5 trees per spot in 1975 to 464.6 spots averaging 4.6 trees per spot. The total number of trees also increased from 205 to over 3,776 and were considered at epidemic levels. At the time of this evaluation, however, southern pine beetle populations were decreased dramatically and appeared to be near sub-epidemic levels.

METHODS

Standard aerial sketch-map and ground survey procedures were used in this evaluation.^{2/} ^{3/} Eight spots containing 63 trees were examined to determine the cause of mortality, number of affected trees, number of currently infested trees, and the general population quality of the beetle population.

RESULTS AND DISCUSSION

The results of this year's evaluation and that of last year's are summarized in Table 1. A comparison of these results shows that southern pine beetle activity on the Tiak Division has diminished significantly since last year.

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^{2/} Detection of forest pests in the Southeast. 1970. USDA, USFS, SA, S&PF, Div. of FPM, Publ. S&PF-7, Atlanta, GA. 51 p.

^{3/} The aerial sketch map data for the Tiak Ranger District was provided by District personnel, Ouachita National Forest, Idabel, OK.

In July 1976, 533 southern pine beetle infestations were detected within the Tiak Division survey boundary. Of this total, 464 of the infestations were on federal land. August 1977 showed 148 infestations, 51 percent of which were single-tree spots. These infestations appeared to be randomly distributed throughout the district.

All of the infestations visited were randomly chosen by FI&DM personnel. Spot selection was made prior to leaving the Tiak Work Center.

Fifty percent of the infestations visited were either inactive, or going inactive. Of the 63 red and fading trees examined, 54 were vacated, and 9 were infested. Brood, when encountered in red and fading trees, consisted of late pupae and callow adults. Only 4 of the 8 infestations checked contained recently attacked green trees. This suggests that although the majority of the spots checked were declining on the Tiak, some spot growth was also occurring. This is also reflected by the green-fresh attack to red and fading infested ratio of 2.33:1. Furthermore, during the peak period of beetle activity (June, July, August, and September) 228 MBF were estimated affected. This included both sawtimber and pulpwood. Consequently, although southern pine beetle activity on the Tiak decreased since last year, the beetle population did not collapse.

Much of this decline in beetle activity is a direct result of district suppression efforts and tactics. Since early October 1976, district personnel have integrated the use of chemicals with direct salvage control. This intensified use of chemicals was confined to infestations which were either currently inaccessible or inoperable. Only infestations with 10 or fewer infested trees were chemically treated. District personnel also stated that 25 percent of all the trees chemically treated were eventually salvage removed. Because of the present success the district is experiencing in decreasing southern pine beetle infestations, the Tiak Division is planning to continue their intensive, but judicious, use of chemicals.

RECOMMENDATIONS

Although we cannot predict the rate of southern pine beetle infestation increase without suppression, nor the infestation increase with project suppression with any degree of certainty, we do feel that they should be significantly less than estimated last year. Last year these rates were estimated at 10 and 3. This year based on the results of this evaluation, we estimate these rates to be 5 and 1, respectively. Therefore, it is recommended that southern pine beetle suppression activities be continued on the Tiak Division, Ouachita National Forest. This district should continue suppression

measures in accordance with the Southern Pine Beetle Control Plan for the National Forests of Arkansas and FSM 5250. Suppression efforts should be accelerated as necessary to cope with increasing beetle populations.

It should also be remembered that the southern pine beetle is a natural part of the southern pine forest and will never be completely eliminated. Direct suppression activities are also, at best, a temporary solution. To decrease future losses from this beetle, predisposing factors leading to stand susceptibility (overstocked stands, diseased stands, stands weakened by storm damage, etc.) will have to be corrected or eliminated through long-term pest management goals and silvicultural procedures.

LITERATURE CITED

1. Drake, L. E. and Norman Churchill. 1975. Detection and Evaluation of Southern Pine Beetle Infestations on the Tiak Division of the Ouachita National Forest in Oklahoma. USDA, USFS, SA, S&PF, Div. of FPM, Report No. 76-2-4.
2. Rogers, Terrence J. and L. E. Drake. 1976. Evaluation of Southern Pine Beetle Infestations on the Tiak Division of the Ouachita National Forest in Oklahoma. USDA, USFS, SA, S&PF, Div. of FPM, Report No. 76-2-19.
3. Aldrich, R. C., R. C. Heller, and M. F. Bailey. 1958. Observation limits of aerial sketch-mapping southern pine beetle damage in the southern Appalachians. J. Forestry 56(3):200-203.

PRECAUTIONARY PESTICIDE USE STATEMENT

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key--out of the reach of children and animals--away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and burn them in a level, isolated place.

Table 1. Summary of results of southern pine beetle evaluation conducted on the Tiak Division, Ouachita National Forest, Oklahoma, July 1976 and August 1977

Ownership Unit		
Tiak Division, Ouachita National Forest		
	FY 1976	FY 1977
1. Results compiled from data collected during the aerial phase of the evaluation:		
Survey type	-	Aerial Sketch Map
Date of aerial survey	7/7/76	8/26/77
Percent survey	50%	100%
Total acreage surveyed	155,649	155,649
Total acreage of Forest Service land	43,133	43,133
Susceptible host type acreage of Forest Service land	34,000	34,000
Total number of spots within survey boundary	533.6	--
Total number of spots on Forest Service lands	262.0(446.6) ^{4/}	78.0(148) ^{4/}
Spots per M acre of host type Forest Service lands	13.7	4.4
Average spot size (trees) Forest Service lands	4.6	4.5
Range of spot sizes (trees) Forest Service lands	1-42	1-15
Reds and faders/M acres host type on Forest Service lands	63.0	19.8
2. Results compiled from data collected during the ground and aerial phases of the evaluation:		
Date of ground phase	7/13/76	8/30/77
Infested trees per M acre of host type Forest Service lands	111.1	7.62
Total number of infested trees on Forest Service lands	3,776.8	259.0
Total volume of infested trees on Forest Service lands	254.0 MBF	90.3 MBF
Total number of affected trees on Forest Service lands	5,846.1	1,132.0
Total volume of affected trees on Forest Service lands	537.8 MBF	200.0 MBF
Ratio of green infested to total red and fading trees	--	228
Total volume estimated affected during peak period of beetle activity	--	

^{4/} Data corrected according to Aldrich and Heller. 1958.